

Claims

1. A method of producing carbon-encapsulated metal nanoparticles, comprising the steps of:
  - 5 providing a carbon-containing metal salt or organometallic compound in a reactor; and decomposing the carbon-containing metal salt or organometallic compound whilst maintaining carbon within the reactor to form carbon-encapsulated metal nanoparticles.
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2. A method as claimed in Claim 1, wherein the reactor is a vessel having a restricted opening.
- 15 3. A method as claimed in Claim 2, wherein the vessel is a tube having one sealed end and one end with a restricted opening.
4. A method as claimed in any one of the preceding claims,
  - 20 wherein a unidirectional gas flow across the reaction site is prevented.
5. A method as claimed in any one of the preceding claims,
  - 25 wherein the carbon-containing metal salt or organometallic compound is decomposed under an inert gas atmosphere.
6. A method as claimed in Claim 5, wherein the inert gas is argon.

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7. A method as claimed in any one of the preceding claims, wherein the carbon-containing metal salt is decomposed by heating.

5 8. A method as claimed in Claim 7, wherein heating is carried out at a temperature of 700 to 1500 °C.

10 9. A method as claimed in any one of the preceding claims, wherein the metal is iron, nickel, cobalt, ruthenium, osmium, rhodium, iridium, palladium, platinum, a lanthanide or uranium.

15 10. A method as claimed in Claim 9, wherein the metal is a magnetic metal.

15 11. A method as claimed in any one of the preceding claims, wherein the carbon-containing metal salt or organometallic compound contains at least 5 carbon atoms per metal atom.

20 12. A method as claimed in any one of the preceding claims, wherein the carbon-containing metal salt is a carboxylic acid metal salt.

25 13. A method as claimed in Claim 12, wherein the carbon-containing metal salt is a stearate or a citrate.

30 14. Carbon-encapsulated metal nanoparticles produced by a method as claimed in any one of the preceding claims.